AMA 12/9/08

Amend Claim 1 starting with page ~~18, step 5,~~ 15 and ~~lines 1-9~~ 3 as follows:

-- A method for measuring resistivity of electromagnetic waves of the earth, comprising:

(1) establishing a linear coordinate system for observation and presetting initial parameters for capturing data, wherein, said linear coordinate system is based on an equation between a propagation frequency (F) and a stratum depth (H), said equation being F=a+ bK'/H, wherein, F is the propagation frequency and its unit is Hz, H is the strata depth and its unit is meter, a is a surface-layer coefficient having a small and neglectable value, b is a coefficient in regional stratum resistivity varied with the stratum depth, having a value of 0.1, K' is a measured depth that is defined during the propagation of the electromagnetic wave in the strata, wherein, said initial parameters include a measurement starting depth (H 1), a measurement ending depth (H2), and a sampling interval value (S);

(2) determining a depth coefficient (B) via the steps of: (a) selecting a known drilling well in a region to be measured or a region adjacent to said region to be measured; (b) performing exploration and measurement around said known drilling well to obtain a curve of electromagnetic wave resistivity; (c) comparing said curve obtained in step (b) with a curve of the electromagnetic wave resistivity of the known drilling well to determine said depth coefficient (B), wherein said comparing further comprises: i. selecting a segment from said curve obtained in (b) and comparing with a corresponding segment of said curve of the electromagnetic wave resistivity of the known drilling well; ii. determining a sampling interval S' using an equation of S' = (Hp2- Hpl)/(L2-L1), wherein, Hp 1 is a depth of a characteristic point of a first well logging curve of the known drilling well and its unit is meter, Hp2 is a depth of a characteristic point of a second well logging curve of the known drilling well and its unit is meter, L1 is the number of a collection point of a newly measured curve of the electromagnetic wave resistivity which has similar characteristics as that of the characteristic point of the curve of the first well logging, and L2 is the number of a collection point of a newly measured curve of the electromagnetic wave resistivity which has similar characteristics as that of the characteristic point of the curve of the second well logging; and iii. responsive to the determination, determining said depth coefficient (B) through equations of (a) E= S'/S and (b) B= EbK', wherein, B is used to substitute the value of bK' in said equation of F=a+bK'/H, thereby resulting in an equation of H=BT, wherein T is a period and its unit is microsecond, wherein B is in a range of 0.001-1.000;

(3) calibrating a surface-layer depth coefficient (Ha) through the steps of: (a) comparing said curve obtained in step (2)(b) with said curve of the electromagnetic wave resistivity of the known drilling well in respective segments to obtain a value of system error of depths at each characteristic point, said value of system error being Ha=Hd-Hc, wherein, Ha is a surface-layer depth coefficient, Hd is a depth of the characteristic point of electrical well logging of the known drilling well, and Hc is a depth of said characteristic point of the electromagnetic wave resistivity curve; and (b) using said surface-layer depth coefficient Ha to calibrate a surface-layer depth for a measured depth using the curve of the electromagnetic wave resistivity, wherein the calibrated measurement starting depth is: H lj=H 1 +Ha;

(4) determining other parameters through the steps of: (a) determining a measurement starting depth or a measurement ending depth for data capturing purposes based on pre-specified needs; (b) selecting a number of sampling intervals depending on different conditions including: i. for comparing different regional strata and tracking electrical interfaces of different, 5 meter, 10 meter or 20 meter being selected as said sampling intervals; and ii. for tracking and detecting ore bed such as oil bed, coal bed and metal ore bed or a crack band, 0.2 meter, 0.5 meter or 1 meter being selected as said sampling intervals; wherein, a number of sampling points can be determined depending on different conditions including: i. taking 8 points when the finishing depth is less than or equal to 1000 meter; ii. taking 16 points when the finishing depth is less than or equal to 2000 meter; iii. taking 32 points when the finishing depth is less than or equal to 4000 meter; and iv. taking 64 points when the finishing depth is less than or equal to 8000 meter; wherein, the corresponding sampling periods being 128, 64, 32 and 16 respectively; (c) determining a channel gain by selecting the first channel (CH 1) and second channel (CH2) when a double sensor is used, and selecting the first to eighth channels (CH1-

CH8) while a multi sensor is used; (d) providing a lowpass filter by using an automatic tracing filter in shallow strata or where there is strong industrial power supply interference; and

(5) determining whether data captured through the steps (1) to (4) meets a quality standard required of original data, and responsive to the determination that the standard is met, recording said data in a data capturing, controlling and processing system, wherein said system is configured to:

(a) receive said measurement starting depth and said sampling intervals determined through the steps (1) to (4), and establish a relation of the strata depth and the period by said equation H=BT;

(b) collect data of an electric field intensity and data of a magnetic field intensity at different strata depths by continuously changing the frequency, and establishing a relation between the electric field intensity and the strata depth and a relation between the magnetic field intensity and the strata depth;

(c) establish a relation between the electromagnetic wave resistivity and the strata depth by means of the relation between the electric field intensity and the strata depth, the relation between the magnetic field intensity and the strata depth, and a relation among the electromagnetic wave resistivity, the electric field intensity, and the magnetic field intensity;

~~(b) determining~~ (d) determine proportions of a vertical coordinate with respect to a horizontal coordinate at an interface of said linear coordinate system for observation in which the vertical coordinate represents the electromagnetic wave resistivity and the horizontal coordinate represents the strata depth; and

~~(c) processing said data to~~ (e) produce a result graph ~~containing data results~~ according to the relation between the electromagnetic wave resistivity and the strata depth. --

Pertinent Art Cited

The following US Patent Applications reveal the current state of the art:

Smith (US 6,114,972) teaches of a method for measuring resistivity of electromagnetic waves of the earth (abstract, lines 1-5), comprising:

transmitting electromagnetic waves into the earth surrounding the wellbore;

measuring the current draw by the electromagnetic transmitter;

determining the resistivity of the earth surrounding the wellbore based upon the current draw; and

comparing the resistivity of the earth surrounding the wellbore with known resistivity to determine the position of the downhole tool in the wellbore (claim 1).